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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/636,042	08/07/2003	Steven A. Justiss	CROSS1560	9977

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EXAMINER	
PATEL, KAUSHIKKUMAR M	
ART UNIT	**PAPER NUMBER**
2188	

DATE MAILED: 08/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/636,042	JUSTISS ET AL.	
	Examiner	Art Unit	
	Kaushikkumar Patel	2188	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 June 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 - 23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 - 23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *8/7/2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This office action is in response to applicant's communication filed June 19, 2006 in response to PTO office action mailed February 17, 2006. The Applicant's remarks and amendments to claims were considered with the results that follow.

2. In response to last office action, claims 1, 16 and 23 have been amended. No claims have been canceled. No new claims have been added. As a result, claims 1-23 remain pending in this application.

3. The affidavit filed on June 19, 2006 under 37 CFR 1.131 has been fully considered but is ineffective to overcome the Hattrup (US 2004/0243736 A1) reference. Based on evidence supplied, it appears that applicant is relying on A) Conception prior to the effective date of reference, followed by Diligence until the US filing date or B) Reduction to Practice back to July, 12, 2002.

The evidence submitted is insufficient to establish a conception of the invention prior to the effective date of the Hattrup (US 2004/0243736 A1) reference. While conception is the mental part of the inventive act, it must be capable of proof, such as by demonstrative evidence or by a complete disclosure to another. Conception is more than a vague idea of how to solve a problem. The requisite means themselves and their interaction must also be comprehended. See *Mergenthaler v. Scudder*, 1897 C.D. 724, 81 O.G. 1417 (D.C. Cir. 1897).

Applicant has not discussed the evidence in the affidavit with required detail. Also applicant submitted "Exhibit B" is not evidence of conception, since the actual application sent with the letter was not included with the evidence.

MPEP 715.07

The affidavit or declaration and exhibits must clearly explain which facts or data applicant is relying on to show completion of his or her invention prior to the particular date. Vague and general statements in broad terms about what the exhibits describe along with a general assertion that the exhibits describe a reduction to practice "amounts essentially to mere pleading, unsupported by proof or a showing of facts" and, thus, does not satisfy the requirements of 37 CFR 1.131(b). In re Borkowski, 505 F.2d 713, 184 USPQ 29 (CCPA 1974). Applicant must give a clear explanation of the exhibits pointing out exactly what facts are established and relied on by applicant. 505 F.2d at 718-19, 184 USPQ at 33. See also In re Harry, 333 F.2d 920, 142 USPQ 164 (CCPA 1964) (Affidavit "asserts that facts exist but does not tell what they are or when they occurred.").

Response to Arguments

4. Applicant's amendments and arguments filed on 6/19/2006 in response to the office action mailed on 2/17/2005 have been fully considered, but they are not persuasive. Therefore, the rejections made in the previous office action are maintained, and restated below, with changes as needed to address the amendments and new grounds of rejection based on newly found reference is also included.

5. Applicant's arguments filed 6/17/2006 have been fully considered but they are not persuasive. Applicant's argument that examiner has failed to established a prima facie case of obviousness is not sufficient since applicant does not specifically point to the deficiencies causing failure to establish a prima facie case of obviousness.

6. With respect to applicant's arguments to traverse rejections as Hong applies, Hong teaches that the data is sorted and accessed by keys. Hong also teaches that the keys can include "...a Service Description ID, or other ID, which can include any form of

identification number that can identify a record" Col. 5 lines 16 – 19. Hong allows for the use of a multitude of identification types when accessing the data on the storage medium. Additionally, applicant does not sufficiently limit the scope of the accessing method to patentably differentiate the instant application from Hong. In the specification, ¶45 sets forth the necessary support for accessing information using strictly source identifiers, however the difference between conventional indexing and the claimed logging method is not adequately presented to traverse Hong.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1 – 10 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pre-Grant Publication 2004/0243736 Hattrup et al. in further in view of U.S. Patent 6,892,199 Hong et al.

As per claim 1:

Hattrup discloses storage onto a sequential storage device by a third party /device (Hattrup ¶73 lines 1 - 4) over a Storage Area Network (SAN) (Hattrup ¶72 lines 5 – 8).

While Hattrup acknowledges the potential to increase the number of source devices (Hattrup ¶63 lines 5 - 9), Hattrup does not explicitly teach a multi-threaded approach to data storage or creating a log to store stored data information.

Hong teaches sorting the data from a plurality of clients into a single data stream for storage (Hong Col. 8 lines 22 - 27) and creating an index of information equivalent to applicant's log on the storage device (Hong Col. 3 lines 15 - 21).

Hong and Hattrup are analogous art because both aim to improve storage backup methodologies. Hattrup acknowledges and discloses apparatus for multiple data sources. Hong discloses a method for efficient multi-threaded storage. Together they form a method for efficient multi-threaded storage onto a single sequential storage device and provide means for retrieval via an index. Hence, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Hong with Hattrup, for the advantages cited above.

As per claim 2:

Hattrup teaches inserting metadata into the data stream (Abstract). Hattrup also teaches metadata containing data offset information (Hattrup ¶87 lines 3 – 5).

Counting preceding data is inherent in this type of memory access for sequential storage devices due to the linear nature of accessing their memory locations.

As per claim 3:

Storing the data onto a storage device is only useful if the data is to be later recovered. It would be obvious to one of ordinary skill in the art that data retrieval is inherent in a data write since data is stored for later retrieval.

As per claim 4:

Hattrup teaches inserting metadata that precedes data (Hattrup Abstract). This metadata can include unique identifying information dependent on the data constituting a file mark including "... size information, error-checking information, a description for the data, a unique identifier for the data, a timestamp and the like" (Hattrup ¶59). Hattrup also teaches accessing data via memory offsets (Hattrup ¶15 lines 12 – 13). It is inherent in memory-offset access that preceding data must be counted due to the linear nature of a sequential storage device.

As per claim 5, it is similar to claim 3 and rejected with the same rationale.

As per claim 6:

Hattrup teaches using a sequential storage device for the database storage medium (Hattrup ¶73 lines 1 - 4) and storing metadata onto the storage medium (Hattrup Abstract).

While the metadata is independent Hattrup does not disclose storing the metadata separately from the data.

Hong teaches storing an index onto the database wherein the data is stored. (Hong Col. 6 lines 44 – 49 and Col. 8 lines 22 - 27).

It would have been obvious to one of ordinary skill in the art to combine Hattrup and Hong for the reasons given in the rejection of claim 1.

As per claim 7:

Hattrup teaches loading autonomous instructions into a third party device for data backup onto a sequential storage device. As part of the instructions Hattrup discloses

including the Logical Unit Number of the source (Hattrup ¶24 lines 12 - 16). Hattrup discloses allowing multiple sources (Hattrup ¶63 lines 5 - 9) and discloses the data manager connected to the source and destination via a SAN (Hattrup ¶70 lines 4 - 5).

Hattrup does not explicitly disclose storing the LUN of the data source, however, it would have been obvious to one of ordinary skill at the time of the invention to store the LUN source with the corresponding data log entry since including the LUN with the data log entry allows the data manager to properly restore data to its source storage device when multiple sources exist.

As per claim 8:

Hattrup does not teach identifying each thread by a corresponding device identifier.

Hong teaches associating the FIFO queues with a client (Hong Col. 6 lines 64 – Col. 7 line 1).

This requires associating a thread with a particular device thus giving each thread a device identifier. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine this feature of Hong with Hattrup, since associating the FIFO queues with a particular storage device allows for efficient multi-threaded storage.

As per claim 9:

Hong teaches storing an index onto the database wherein the data is stored. (Hong Col. 6 lines 44 – 49).

As per claim 10:

Hong teaches a configuration module to provide the SMSM and the index builder with the directory path to the index (Hong Col. 3 lines 18 – 26). Providing a directory path to the index allows for storage on medium separate from the data backup device.

As per claim 23:

Claim 23 is functionally equivalent to claim 1 and hence is rejected with the same rationale. As per a software product, Hattrup teaches generating autonomous instructions (Abstract). These instructions must be stored onto a computer readable medium and must be executed by a third party requiring a data processor

Claims 11 – 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,892,199 Hong and further in view of U.S. Pre-Grant publication 2004/0243736 Hattrup.

As per claim 11:

Hong teaches merging data from several threads into a single data stream in a semi-sort merge fashion (Hong Col. 8 lines 22 – 27). Hong also teaches creating an index with information about the data stored onto the storage device (Hong Col. 6 lines 44 – 49).

Hong does not teach using a sequential storage device as the backup medium.

Hattrup uses a sequential storage device for the backup medium (Hattrup ¶72). Additionally, Hattrup acknowledges using multiple data sources though not specifically as in multiple threads (Hattrup ¶63 lines 5 – 9). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine Hong and Hattrup since they both seek to improve storage backup techniques. Also, Hong provides a specific

methodology to accomplish multi-threaded backup while Hattrup discloses the hardware means to accomplish this.

As per claim 12:

Hong discloses writing the index upon signaling of completion of a write command. (Hong Col 7 lines 8 - 10). Hong creates index entries corresponding to the write commands.

As per claim 13:

Hong teaches storing the index to a storage device wherein the data is located (Hong Col. 6 lines 44 – 49).

As per claim 14:

Hong teaches providing a configuration module to "...specify a directory path for the data files and the index files, and to provide the directory path to the SMSM and to the index builder..." (Hong Col. 3 lines 18 – 21).

As per claim 15:

Hattrup discloses using an offset (Hattrup ¶87 lines 4 - 5), starting at a location, to index to a particular location. Because of the purely linear access of sequential storage devices it is inherent that an index must be used to identify information and index to the corresponding location.

As per claim 16:

Hong teaches a semi-sort merge from a multi-threaded storage arrangement. A Semi-Merge Sort Module, a copy manager, manages the merge process. Hong also

teaches a memory system, FIFO queues, having data to be stored onto the sequential storage device (Hong Col. 8 lines 22 - 27).

Hong does not teach a sequential storage backup device. Hong also does not teach a specific method of retrieval such as indexing to the storage device.

Hattrup teaches a sequential storage device used as the storage medium (Hattrup ¶99). Hattrup discloses including an offset with a marker as part of stored data identification. The copy manager taught by Hattrup (Hattrup ¶53) will count memory locations equal to the offset to arrive at the identified data (Hattrup ¶87). This involved indexing to a location corresponding to identified data and does not involve reading all the preceding data.

Both Hong and Hattrup aim to improve storage backup methodologies. Additionally, Hattrup's structural setup allows for multiple sources (Hattrup ¶63 lines 5 – 9). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine Hong with Hattrup since both reference teach more efficient storage backup. Hattrup acknowledges multiple data sources while Hong provides a specific method for handling a multi-threaded scenario.

As per claim 17:

Hong discloses FIFO queues coupled to the SMSM, which holds the burst data sent by the data sources. This data is then merged by the SMSM and stored in the storage device (Hong Col. 5 lines 50 - 64).

As per claim 18:

Hattrup discloses that the formatting for commands issued to the copy manager is in accordance with third party copy commands (Hattrup ¶29 lines 7 – 10).

As per claim 19:

Hong discloses a system with multiple clients (Hong Col. 9 lines 15 - 18). The clients disclosed are functionally equivalent to the hosts in claim 19.

As per claim 20:

Hattrup discloses a plurality of sources being connected as data sources (Hattrup ¶63 lines 5 – 9)

As per claim 21:

Hattrup discloses the data mover coupled to a SAN (Hattrup Fig. 1 and ¶8).

As per claim 22:

Hattrup discloses the data mover attached to a SAN, a variant of Network Attached Storage (Hattrup ¶72 lines 5 - 8).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (AAPA herein after) and further in view of Howard (5,950,219). and Microsoft Tape Format Specification. Version 1.00a. MTF herein after).

As per claims 1 and 23, AAPA teaches a method for retrieving data from a sequential storage device on which blocks of data corresponding to multiple threads are stored in an intermingled fashion (see par. [0005], taught as application may initiate multiple threads that store data from different source onto backup medium such as tape and par. [0007], taught as restore a backup medium);

AAPA fails to teach log and restoring data from reading a log. Howard teaches method of storing data from multiple clients/applications or threads (clients/applications are assigned to threads, see AAPA, par. [0005]) onto backup tape device in intermingled fashion (see abstract, fig.1);

Howard further teaches data from different sources (threads) are stored on tape as they arrives (i.e. in the sequence of arrival) and after finishing the writing of data, an entry is inserted into the catalog to identify relationship between dataset name and connected task to identify data, the catalog entry also includes information to facilitate the usage of high-speed search feature of the tape device and catalog is used to read (retrieve) the data (col. 3, line 65 – col. 4, line 30). Howard further teaches that catalog entry contains direction and location information to enable the client's data to be found (col. 6, lines 42-46). Howard also teaches that from the catalog, it is possible to deduce where client dataset is stored and this information enables the read server job to locate start of data and to schedule concurrent access effectively (col. 7, lines 15-25). Thus, Howard teaches reading a log to locate a sequence of data corresponding to multiple tasks (threads) to indexing to the location of the identified data in sequential storage. It would have been obvious to one having ordinary skill in the art at the time of the

invention to utilize a catalog to index information related to data stream as taught by Howard in the system of AAPA for faster retrieval of data (see Howard, col. 4, lines 23-30).

As per claim 2, it is inherent feature of tape backup storage to forward or rewind to read data stored in the tape medium and as taught by Howard, if catalog is not used data processing defaults to a sequential scan, however it is less efficient (col. 7, lines 36-39). Thus, it is inherent feature of Howard to count preceding blocks to locate actual location of identified data from sequential storage. (see MTF fig. 3, which teaches locating data using offsets).

As per claim 3, Howard teaches retrieving the identified data from sequential storage device (col. 4, lines 15-17).

As per claim 4, Howard teaches storing information to facilitate the usage of high-speed search feature of tape device but explicitly fail to teach file marks. MTF teaches that file marks are used for logical separation and fast positioning within a media (see MTF, page 17, sec. 3.2.3). It would have been obvious to one having ordinary skill in the art at the time of the invention to utilize file marks as taught by MTF in system of Howard and AAPA to create logical separation between blocks and fast positioning of tape device for faster search of data block.

As per claim 5, Howard teaches retrieving the identified data from sequential storage device (col. 4, lines 15-17).

As per claims 6 and 9, it is obvious to one having ordinary skill in the art at the time of the invention to store the data and write log information before reading the log.

As per storing the log, MTF teaches creating catalog information on tape device (page 15, fig. 3). The advantage would be, by storing catalog on tape device makes it easily available when it is required to read/write data from/to tape device.

As per claims 7-8, Howard teaches storing data as arrived from task (thread) and after writing a data to tape device, corresponding catalog entry is created to identify relation between the source of the data and dataset itself (col. 3, line 65 – col. 4, line 14, col. 6, lines 30-38). MTF also teaches storing catalog information (page 20, sec.3.3.2.2), which identifies relationships between users and their data (page 15, sec. 3.2.1.2.1). Thus, Howard and MTF teach entries corresponding to thread ID and device ID.

Claim 11 is similar in scope with respect to claim 1 (write threads can be interpreted as backup threads assigned to source. See AAPA, par. [0005] and [0006]).

Claim 13 is similar in scope with respect to claim 9.

Claim 15 is similar in scope with respect to claims 2 and 4.

Thus, claims 11, 13, 15 are also rejected under same rationales as applied to claims 1-9 above.

As per claim 16, AAPA teaches a copy manager (par. [0004]) in networked environment as well as stand-alone device (par. [0005]). Howard also teaches server job task using third party products (col. 5, lines 14-16). Copy manager of AAPA transfers data from respective backup threads to tape storage device, which inherently requires copy manager coupling to a memory (par. [0006] teaches use of buffer). Since Howard teaches reading catalog information to locate data and skipping non-related

data during read process (col. 4, line 17-18), inherently teaches locating data with respect to identified thread without reading preceding blocks or metadata.

As per claims 17, 19-20 and 22, AAPA teaches copy manager (par. [0004]) assigns threads to plurality of data sources and runs on networked storage device or as a stand alone device (par. [0005]), inherently requires a memory associated with copy manager and requires storing into memory from different backup thread in order to process data.

As per claim 18, AAPA teaches using extended copy command (par. [0004]).

As per claim 21, AAPA or Howard failed to teach copy manager implemented in a switch fabric. But it is well known in the art to use copy manager in switch fabric in order to communicate with plurality of client devices and storage devices.

As per claims 10 and 14, AAPA and Howard fails to teach storing log on a storage medium, which is separate from the sequential storage. It would have been obvious to one having ordinary skill in the art at the time of the invention to store catalog on a different storage than tape because as taught by, Howard and MTF, the catalog is stored at the beginning of the tape device and if the process in reading/writing data from tape medium and if other client needs to access data, the tape must be re-winded to read the catalog and to avoid frequent rewinding of the tape it is advantageous to store catalog at different storage (may be cache) other than tape device.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaushikkumar Patel whose telephone number is 571-272-5536. The examiner can normally be reached on 8.00 am - 4.30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on 571-272-4210. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

kmp

Kaushikkumar Patel
Examiner
Art Unit 2188

8/21/06

MANO PADMANABHAN
SUPERVISORY PATENT EXAMINER